

Appendix C

Range Operations Overview

C-1. General

When developing a CSM for a former military site it is important for the team to understand the basics of design, operation, and maintenance of training ranges. Different parts of ranges were used for different operations with distinctly different hazards existing at each of these locations. This section presents only an overview of the most important elements of range operations.

C-2. Storage Areas

These are typically located near, but not within, a range. Types of storage areas include permanent or temporary facilities for stockpiling munitions and munitions components. These facilities can include warehouses, bunkers, magazines, or vehicles. Munitions stored in these facilities are normally in their shipping containers or configurations and are seldom fuzed. They represent very little hazard of inadvertent detonation. Though not a normal practice, unwanted or unserviceable munitions were occasionally buried in or near storage areas.

C-3. Firing Points

These are fixed locations or areas where munitions are prepared for use and then fired. Munitions come in many different configurations, but normally include the filler (typically explosive) and a fuzing system to initiate the explosive. In addition, many munitions include a propellant charge designed to propel them to their target. For most munitions, at least two, and often all three of these main components were stored separately. They were only combined and configured for use at the firing point. In many instances there were excess components, especially propellant, resulting from the use of munitions at firing points. Excess propellants were typically burned near the firing point, and other excess components were either returned to storage, destroyed through burning or detonation, or buried.

C-4. Targets

These are particular locations within a larger impact area where munitions are intended to land and function. Targets can consist of almost anything, including excess military or civilian vehicles, old appliances, wooden or cardboard structures, geographic features, or map coordinates with no defining features. Most munitions fired at a target functioned as intended, and therefore represent no further safety hazard. However, a significant percentage—typically from 1 to 20%—did not function as intended. Either the munitions did not explode at all, or only a part of the filler was consumed when the munitions functioned. When munitions were fired but inadvertently did not function as designed, they are categorized as UXO. UXO can be extremely dangerous and must never be touched by anyone other than trained personnel. Impact areas containing UXO should be regarded as extremely hazardous sites. At many larger range complexes,

several ranges may share a common impact area. As indicated by the example in Figure C-1, determination of the OE hazards in an impact area can be quite complex. Numerous weapons systems firing a different types of ammunition over a time have resulted in an impact area that is difficult to characterize. Both OE hazards and environmental contaminants must be evaluated. UXO (armed or fuzed) and residual OE compounds are likely to be present.

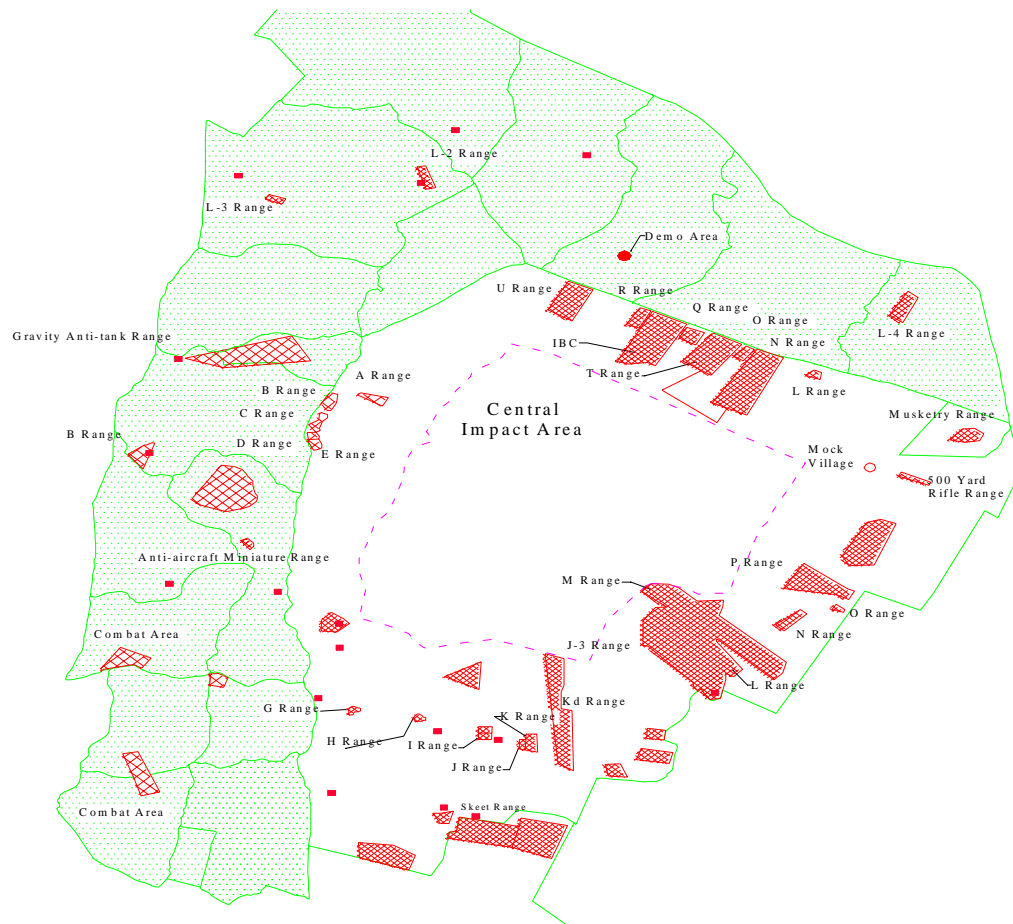


Figure C-1. Typical Range Complex Impact Area

C-5. OB/OD Areas

These are locations where munitions are destroyed, usually within a permitted facility. Typically, excess stockpile munitions were destroyed at OB/OD areas. However, UXO from target and impact areas are sometimes moved to OB/OD areas for destruction as well. Basically, UXO can be divided into two groups: those that trained personnel determine are moveable, and those that are determined unsafe to move. Those that are unsafe to move are destroyed where they are found by detonating in place. UXO and other munitions that are determined to be safe to move can be ei-

ther detonated in place or moved to another location, often an OB/OD facility, for destruction. Because of safety concerns, UXO, whether “safe to move” or not, are never disassembled and their components recovered. Demolition operations are not always effective. Entire munitions, as well as dangerous components, can remain. Like target areas, demolition areas should be regarded as extremely hazardous sites.